

173

REMARKS

174

175 In response to the Office Action dated July 26, 2005, Applicant has amended the
176claims and the specification. Claims 40-50 remain pending in the application. Applicant
177has also added new claims 51 to 69 in the application. Reconsideration of the rejections
178and allowance of all claims is respectfully requested.

179

180 The Rejections

**1811. The Examiner has rejected Claims 40-50 as being indefinite because the terms
182"substantial" and "substantially" allegedly render the claim indefinite.**

183

184The Examiner has rejected Claims 40-50 as being indefinite. Applicant has amended the
185claim language in Claims 40 and 50 to address the Examiner's comments. Applicant
186submits that the claims are allowable and requests that the rejection be withdrawn.

187

**1882. Claims 40-50 rejection under 35 U.S.C. 102(e) as being anticipated by Narvaez et.
189al. U.S. Patent No.6,704,320.**

190

191 The Examiner has rejected the Claims 40-50 under 35 U.S.C. 102(e) as being
192anticipated by U.S. Patent No. 6,704,320 ("Narvaez"). Applicant respectfully disagrees.
193First, Narvaez is directed to solving a different problem than Applicant's invention.
194Narvaez describes a network router, a specialized controlling computer. Narvaez
195proposes an algorithm that runs on a network router to build an optimal routing table for a
196network. In other words, Narvaez discloses an algorithm for a network router to calculate
197and build a forwarding table containing the shortest paths for sending data packets
198between two separate computers (i.e., "nodes" as used in Narvaez) in the router's network.
199For example, the first sentence of the Narvaez abstract declares, "[a] dynamic shortest
200path tree (SPT) algorithm for a router...". The first sentence of the Narvaez
201BACKGROUND OF THE INVENTION states, "1. Field of the Invention, The present
202invention relates to routing of information packets in a communications network, and
203more particularly, to a router...". None of the computers in the pairs of computers (or
204nodes) discussed in Narvaez are involved in running the algorithm. The only computer
205running the algorithm is the router. In Narvaez, the communications between the
206computers (or nodes) are directed by the centralized computer, namely the router.

207

208 In contrast, Applicant's invention describes an algorithm that runs in a
209decentralized manner on many computers to organize them for efficient sorting,
210searching, and broadcasting. All the inter-networked computers described in Applicant's
211invention are executing the algorithms necessary to sort, search, and broadcast without
212centralized coordination. As set forth in the abstract, Applicant's invention discloses a
213technique for organizing a plurality of computers *without the use of a controlling*
214*computer*. In stark contrast, Narvaez describes a single controlling computer.

215

216 A. Claim 40

217

218 The Examiner has rejected Claim 40 because Narvaez allegedly teaches a
219distributed computer network, comprising a collection of computers. Applicant

220respectfully disagrees. The "distributed computer network" to which Narvaez refers
221consists of computers that are distributed in the sense that they are not physical neighbors.
222They are not distributed computers in the sense that they are simultaneously computing
223the Narvaez algorithm at multiple locations and somehow coordinating the results.
224Narvaez does not disclose a distributed processing network, but merely an algorithm to
225update a router table.

226

227 The Examiner has also rejected Claim 40 because Narvaez allegedly discloses
228means for an added computer to locate the collection of computers. The Examiner cites
229to col. 11, lines 10-28 of Narvaez on this point ("discloses all connected nodes are
230determined with associated links"). Applicant respectfully disagrees. In Narvaez, each
231computer in the network communicates with the router directly regarding its location.
232See col. 12, lines 47-49. Narvaez does not disclose means for an added computer to
233locate the collection of computers.

234

235 The Examiner has rejected Claim 40 because Narvaez allegedly discloses means
236for the added computer to establish a connection to the collection of computers. The
237Examiner cites to col.11, lines 44-58 of Narvaez as disclosing "links are determined
238between main node and all other nodes." Applicant respectfully disagrees. The cited
239portion of Narvaez merely discloses setting "weight" values for a new path between two
240existing nodes (or computers) in the router's network. This is not a means for the added
241computer to establish a connection to the collection of computers. Narvaez is directed to
242establishing a path from one computer to another single computer. In contrast,
243Applicant's invention is directed to establishing a virtual, dynamic hierarchical
244relationship from one computer to many computers in a network.

245

246 The Examiner has rejected Claim 40 because Narvaez allegedly discloses means
247for each computer in the collection of computers, including the added computer, to
248establish a logical arrangement such that each computer in the collection of computers
249can act as a top level of a hierarchy, wherein the hierarchy includes at least a substantial
250number of the computers in the collection of computers. The Examiner cites to col. 10,
251lines 37-62 of Narvaez as discloses updated tree adds new nodes and deletes nodes
252according to distance calculatoin from the main node. Applicant respectfully disagrees.
253Narvaez does not describe a system or network where a computer is added or deleted.
254Narvaez describes recalculation of optimized paths from one node to another. Moreover,
255there is no node in Narvaez acting as the top level of a hierarchy. Indeed, Narvaez does
256not even use the word "hierarchy" in the entire patent. Narvaez merely discusses an
257algorithm operating on a single centralized computer, i.e., the router. In contrast, the
258hierarchies in Applicant's invention consist of relationships between actual, physically
259distributed computers.

260

261 For the same reasons, rejected Claims 41-50 are allowable as being dependent
262upon Claim 1, which is not anticipated by Narvaez.

263

264 **B. Claim 41**

265

266 The Examiner has rejected Claim 41 because Narvaez allegedly discloses the

267distributed computer network of claim 40, wherein the hierarchy comprises a set of
268member computers, a membership of which depends upon a logical location of the
269computer that acts as the top level of the hierarchy. The Examiner cites to col. 11, lines
27010-60 of Narvaez on this point. Applicant respectfully disagrees. In addition to the
271foregoing reasons why Narvaez does not disclose the elements of Claim 40, Narvaez is
272not creating or establishing any hierarchy in the network. Narvaez is merely using an
273algorithm to sort calculated paths between nodes to find a "shortest path" from one node
274to another. Applicant's invention, in contrast, establishes a virtual, dynamic hierarchical
275relationship from one computer to many computers in a network, where the "top" of a
276hierarchy may be a computer that initiates a distribution of a message to the collection or
277initiates a search query to the collection of computers. Narvaez does not disclose this
278either.

279

280 **C. Claim 42**

281

282 The Examiner has rejected Claim 42 because Narvaez allegedly discloses the
283distributed computer network of claim 40, further comprising means for the computer
284that acts as the top level of the hierarchy to initiate a search for one of a specified
285computer and specified data. The Examiner cites to col. 12, lines 16-35 of Narvaez on
286this point. Applicant respectfully disagrees. Narvaez discloses inspecting "edges" or data
287parameters in his table of nodes to calculate a distance attribute or "weight" for a path
288between two nodes. Narvaez does not disclose searching of computers. The searches to
289which Narvaez refers are searches of tables located on a single centralized computer, i.e.,
290the router. Narvaez is "searching" mathematical parameters in an array of data
291characterizing the nodes in his network. Applicant's invention, on the other hand,
292searches physically distributed computers for specific information. Narvaez does not. In
293addition to the reasons why Narvaez does not disclose the elements of Claim 40, Narvaez
294does not disclose the elements of Claim 42.

295

296 **D. Claim 43**

297 The Examiner has rejected Claim 42 because Narvaez allegedly discloses the
298distributed computer network of claim 42, wherein each computer in the collection of
299computers includes a searchable index of the contents of the computer for facilitating said
300search. The Examiner cites to col. 12, lines 16-35 of Narvaez on this point. Applicant
301respectfully disagrees. Narvaez discloses inspecting "edges" or data parameters in his
302table of nodes at the router to calculate a distance attribute for a path between two nodes.
303Narvaez does not disclose searching of computers. Narvaez is "searching" mathematical
304parameters in a data array characterizing the nodes in his network. Narvaez does not
305disclose each computer in the collection including a searchable index of the contents of
306the computer to facilitate a search.

307

308 **E. Claim 44**

309

310 The Examiner has rejected Claim 44 because Narvaez allegedly discloses the
311distributed computer network of claim 40, further comprising means for the computer
312that acts as the top level of the hierarchy to broadcast information throughout the
313hierarchy. The Examiner cites to col. 12, lines 16-35 of Narvaez on this point. Applicant

314respectfully disagrees. Narvaez merely discusses inspecting data parameters in a data
315array to calculate a distance attribute for a path between two nodes. Narvaez does not
316discuss or deal with broadcasting information throughout a network of computers. It also
317does not disclose means for a computer acting as the top level of a hierarchy to broadcast
318information throughout the hierarchy.

319

320 **F. Claim 45**

321

322 The Examiner has rejected Claim 45 because Narvaez allegedly discloses the
323distributed computer network of claim 40, further comprising means to control a
324bandwidth utilization of the collection of computers. The Examiner cites to col. 1, lines
32515-30 of Narvaez on this point. Applicant respectfully disagrees. Narvaez does not
326disclose means to control bandwidth utilization of a collection of computers. Narvaez
327only discloses, in the context of discussing prior art router table algorithms, that
328bandwidth is merely a factor in the "link cost" or "weight" to be used by a router to
329determine the "shortest path" between two nodes. This does not disclose controlling
330bandwidth utilization of a collection of computers.

331

332 **G. Claim 46**

333

334 The Examiner has rejected Claim 46 because Narvaez allegedly discloses the
335distributed computer network of claim 40, further comprising a plurality of lower level
336computers, wherein information regarding the lower level computers is stored in a
337respective one of the computers in the collection of computers. The Examiner cites to
338col. 4, lines 10-60 of Narvaez on this point. Applicant respectfully disagrees. For the
339same reasons Narvaez does not disclose the elements of Claim 40, it does not anticipate
340Claim 46.

341

342 **H. Claim 47**

343

344 The Examiner has rejected Claim 47 because Narvaez allegedly discloses the
345distributed computer network of claim 40, further comprising means for rebuilding a
346logical arrangement of the collection of computers following a loss of at least one
347computer from the collection of computers. The Examiner cites to col. 4, lines 10-60 of
348Narvaez. Applicant respectfully disagrees. Narvaez discloses calculation of the shortest
349path from one node to another in a network for a router table. Narvaez recalculates the
350optimal route between nodes (according to the weighting factors considered by the
351disclosed algorithm). Narvaez does not teach rebuilding a logical arrangement of the
352collection of computer following a loss of at least one computer from the collection of
353computers. Applicant's invention teaches how to rebuild the logical arrangement within
354the collection of computers, without a centralized controlling computer, following the
355loss of one or more computers in the collection due to functionality reasons or network
356problems. This allows, for example, the collection of computers to rebuild its logical
357arrangement in the context of a failure recovery. Narvaez does not teach this.

358

359 **I. Claim 48**

360

361 The Examiner has rejected Claim 48 because Narvaez allegedly discloses the
362distributed computer network of claim 40, further comprising means for distributing
363software updates throughout the collection of computers. The Examiner again cites to
364col. 4, lines 10-60 of Narvaez on this point. Applicant respectfully disagrees. For the
365same reasons as Claim 44, Narvaez does not disclose distributing software updates
366throughout a collection of computers, much less how to accomplish such a task. Narvaez
367is only calculating a router table.

368

369 **J. Claim 49**

370

371 The Examiner has rejected Claim 49 because Narvaez allegedly discloses the
372distributed computer network of claim 40, wherein each computer in the collection of
373computers includes dynamic physical address. The Examiner cites to col. 7, lines 40 –
374col. 8, lines 60 of Narvaez on this point. Applicant respectfully disagrees. Narvaez
375discloses an algorithm that is purportedly "dynamic," presumably because he updates the
376router table. This has nothing to do with and does not disclose a distributed computer
377network wherein each computer in the collection of computers includes a dynamic
378physical address. Applicant's invention teaches organizing a collection of computers
379whose address may change due to dynamic allocation of addresses due to mechanisms
380such as DHCP (dynamic host configuration protocol) or network address translation
381techniques.

382

383 **K. Claim 50**

384

385 The Examiner has rejected Claim 50 because Narvaez allegedly discloses the
386distributed computer network of claim 40, further comprising means for generating the
387logical arrangement to substantially minimize a logical distance between a logical center
388of the collection of computers and a logical collection edge. The Examiner cites to col. 4,
389lines 10-60 of Narvaez on this point. Applicant respectfully disagrees. Narvaez is
390optimizing routes from one node to another node in his network. In contrast, Applicant's
391invention manages the logical arrangement of the computers in the collection of
392computers to maintain an efficient geometry for a one-to-many broadcast of data or
393search query.

394

395 For the foregoing reasons, Applicant respectfully submits that Narvaez does not
396anticipate Claims 40-50 and the rejections should be withdrawn.

397

398 **Amendment to the Specification:**

399 Applicant has amended the specification to correct a description of Figure 6 in the
400BRIEF DESCRIPTION OF THE DRAWINGS section on page 10, line 4 ("Fig 6
401illustrates the rapid increase in the number of computers reached with the addition of each
402concentric polygon."). This amendment corrects a typographical error (removing a
403description of Figures 6A to 6C) because Figures 6A – 6C do not exist. Only Figure 6
404was submitted with the original application. The description of Figure 6 is found on page
40517, lines 19-20. Accordingly, the amendment does not add new matter to the application.

406

407 Applicant has also amended the specification in the paragraph beginning on page

40812, line 21 as follows:

409 "The logical means to communicate 25 is defined by a neighbor relationship.
 410 Each computer possesses links to four neighbors. Fig. 3A illustrates each computer's
 411 neighbors as neighbor0 40, neighbor1 41, neighbor2 42, and neighbor3 43. Neighbor1 41
 412 is clockwise from neighbor0 40, neighbor2 42 is clockwise from neighbor1 41, and
 413 neighbor3 43 is clockwise from neighbor2 42."

414

415 This amendment is to correct two typographical errors. The first is to remove a
 416 comma between "neighbor0" and "40" on page 13, line 1. The second typographical error
 417 stated that the described neighbor relationship between the computers shown in Figure
 418 3A (*i.e.*, neighbor0 40 to neighbor1 41 to neighbor2 42 to neighbor3 43) were
 419 "counterclockwise", when they were actually clockwise – as shown in Figure 3A. In
 420 particular, neighbor1 41 is the next computer in a clockwise direction from neighbor0 40,
 421 neighbor2 42 is the next computer in the clockwise direction from neighbor1 41, and so
 422 on. *See* Figure 3A. This amendment is to correct typographical errors and does not add
 423 any new matter.

424

425 Applicant has amended the reference to "neighbor 41" to "neighbor1 41" to
 426 correct a typographical error in line 20 of page 13. This amendment does not add any
 427 new matter.

428

429 **Amendment to the Drawings:**

430 The Examiner has objected to the drawings submitted with the application.

431 With regard to a missing Figure 10D, Applicant previously corrected the error
 432 referring to Figure 10D in the October 10, 2001 Preliminary Amendment.

433

434 In the above Amendment to the Specification, the reference to Figs. 6A-6C in the
 435 BRIEF DESCRIPTION OF THE DRAWINGS section has been corrected to make
 436 reference to Figure 6, along with a description of the drawign which is set forth on page
 437 17, lines 19-21 of the application. *See* Amendment to the Specification. This amendment
 438 is to fix a typographical error. Since, the substituted text referring to Figure 6 is found on
 439 lines 19-21 of page 17, Applicant submits that this amendment does not add new matter
 440 to this application.

441

442 The Examiner objected to Figure 3B because the reference to "neighbor 41" on
 443 page 13 of the specification did not exist. The reference to "neighbor 41" is a
 444 typographical error and should be "neighbor1 41", which reference is shown in Figure
 445 3A. Applicant submits that this overcomes Examiner's objection to Figure 3B.

446

447 **PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. §1.136(a)**

448

449 This is a petition for an extension of the time in the above-identified application
 450 for three months to respond to the Office Action dated July 26, 2005.

451 The extension of time requested and corresponding fee, as set forth in 37 C.F.R.
 452 §1.17(a), are checked below:

453 Total months requested Fee for extension Fee for Small Entity

454

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.